

Atty. Docket No. SEQ-4067-UT  
USSN 10/723,670

### AMENDMENTS

#### Amendments to the Claims:

Please cancel claims 11-41 and 48-54 without prejudice or disclaimer, and please amend claims 1, 42 and 55 as set forth in the complete listing of the claims that follows. This complete listing of the claims replaces previous claim listings.

1 (currently amended). A method for identifying a subject at risk of breast cancer, which comprises detecting the presence or absence of one or more polymorphic variations associated with breast cancer in a nucleic acid sample from a subject, wherein the one or more polymorphic variations are detected in a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence in SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B;~~

(b) a nucleotide sequence which encodes a polypeptide encoded by a nucleotide sequence in SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B;~~

(c) a nucleotide sequence which encodes a polypeptide that is 90% or more identical to the amino acid sequence encoded by a nucleotide sequence in SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B;~~

(d) a fragment of a nucleotide sequence of (a), (b), or (c);

whereby the presence of the polymorphic variation is indicative of the subject being at risk of breast cancer.

2 (original). The method of claim 1, which further comprises obtaining the nucleic acid sample from the subject.

3 (original). The method of claim 1, wherein the one or more polymorphic variations are detected at one or more positions in SEQ ID NO: 1 is selected from the group consisting of 50479, 50567, 51865, 58349, 58464, 68551, 70419, 73014, 75242, 75505, 78067, 78265, 78290, 78956, 79196, 81886, 82399, 83380, 86645, 86704, 88134, 96416, 96429, 96535, 110920, 14117, 117297, 117617, 118870, 123740, 123792, 123876, 123880, 126685, 126696, 126990, 127939, 146146, and 146312.

Atty. Docket No. SEQ-4067-UT  
USSN 10/723,670

4 (original). The method of claim 1, wherein the one or more polymorphic variations are detected within a region spanning positions 78265 to 123880, spanning positions 78265 to 96535, or spanning positions 117297 to 123880 in SEQ ID NO: 1.

5 (original). The method of claim 3, wherein a polymorphic variation is detected at position 78265 in SEQ ID NO: 1.

6 (original). The method of claim 3, wherein a polymorphic variation is detected at position 96535 in SEQ ID NO: 1.

7 (original). The method of claim 3, wherein a polymorphic variation is detected at position 117617 in SEQ ID NO: 1.

8 (original). The method of claim 1, wherein the one or more polymorphic variations are detected at one or more positions in linkage disequilibrium with one or more positions in SEQ ID NO: 1 selected from the group consisting of 50479, 50567, 51865, 58349, 58464, 68551, 70419, 73014, 75242, 75505, 78067, 78265, 78290, 78956, 79196, 81886, 82399, 83380, 86645, 86704, 88134, 96416, 96429, 96535, 110920, 14117, 117297, 117617, 118870, 123740, 123792, 123876, 123880, 126685, 126696, 126990, 127939, 146146, and 146312.

9 (original). The method of claim 1, wherein detecting the presence or absence of the one or more polymorphic variations comprises:

hybridizing an oligonucleotide to the nucleic acid sample, wherein the oligonucleotide is complementary to a nucleotide sequence in the nucleic acid and hybridizes to a region adjacent to the polymorphic variation;

extending the oligonucleotide in the presence of one or more nucleotides, yielding extension products; and

detecting the presence or absence of a polymorphic variation in the extension products.

10 (original). The method of claim 1, wherein the subject is a human.

11-41 (cancelled).

Atty. Docket No. SEQ-4067-UT  
USSN 10/723,670

42 (currently amended). A method for detecting or preventing breast cancer in a subject, which comprises:

detecting the presence or absence of one or more polymorphic variations associated with breast cancer in a nucleic acid sample from a subject, wherein the polymorphic variation is detected in a nucleotide sequence selected from the group consisting of:

- (a) a nucleotide sequence in SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B~~;
- (b) a nucleotide sequence which encodes a polypeptide encoded by a nucleotide sequence in SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B~~;
- (c) a nucleotide sequence which encodes a polypeptide that is 90% or more identical to the amino acid sequence encoded by a nucleotide sequence in SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B~~;
- (d) a fragment of a nucleotide sequence of (a), (b), or (c) comprising the polymorphic variation; and

administering a breast cancer preventative or detection procedure to a subject in need thereof based upon the presence or absence of the one or more polymorphic variations in the nucleic acid sample.

43 (original). The method of claim 42, wherein the one or more polymorphic variations are at one or more positions in SEQ ID NO: 1 is selected from the group consisting of 50479, 50567, 51865, 58349, 58464, 68551, 70419, 73014, 75242, 75505, 78067, 78265, 78290, 78956, 79196, 81886, 82399, 83380, 86645, 86704, 88134, 96416, 96429, 96535, 110920, 14117, 117297, 117617, 118870, 123740, 123792, 123876, 123880, 126685, 126696, 126990, 127939, 146146, and 146312.

44 (original). The method of claim 43, wherein the one or more polymorphic variations are in a region spanning positions 78265 to 123880, spanning positions 78265 to 96535, or spanning positions 117297 to 123880 in SEQ ID NO: 1.

45 (original). The method of claim 42, wherein the breast cancer detection procedure is selected from the group consisting of a mammography, an early mammography program, a frequent mammography program, a biopsy procedure, a breast biopsy and biopsy from another tissue, a breast ultrasound and optionally ultrasound analysis of another tissue, breast magnetic

Atty. Docket No. SEQ-4067-UT  
USSN 10/723,670

resonance imaging (MRI) and optionally MRI analysis of another tissue, electrical impedance (T-scan) analysis of breast and optionally of another tissue, ductal lavage, nuclear medicine analysis (*e.g.*, scintimammography), BRCA1 and/or BRCA2 sequence analysis results, thermal imaging of the breast and optionally of another tissue, and a combination of the foregoing.

46 (original). The method of claim 42, wherein the breast cancer preventative procedure is selected from the group consisting of one or more selective hormone receptor modulators, one or more compositions that prevent production of hormones, one or more hormonal treatments, one or more biologic response modifiers, surgery, and drugs that delay or halt metastasis.

47 (original). The method of claim 46, wherein the selective hormone receptor modulator is selected from the group consisting of tamoxifen, reloxifene, and toremifene; the composition that prevents production of hormones is an aromatase inhibitor selected from the group consisting of exemestane, letrozole, anastrozol, goserelin, and megestrol; the hormonal treatment is selected from the group consisting of goserelin acetate and fulvestrant; the biologic response modifier is an antibody that specifically binds herceptin/HER2; the surgery is selected from the group consisting of lumpectomy and mastectomy; and the drug that delays or halts metastasis is pamidronate disodium.

48-54. (cancelled).

55 (currently amended). A method of selecting a subject that will respond to a treatment of breast cancer, which comprises:

detecting the presence or absence of one or more polymorphic variations associated with breast cancer in a nucleic acid sample from a subject, wherein the polymorphic variation is detected in a nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence of SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B;~~
- (b) a nucleotide sequence which encodes a polypeptide consisting of an amino acid sequence encoded by a nucleotide sequence in SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B;~~

Atty. Docket No. SEQ-4067-UT  
USSN 10/723,670

(c) a nucleotide sequence which encodes a polypeptide that is 90% or more identical to an amino acid sequence encoded by a nucleotide sequence in SEQ ID NO: 1 ~~Figures 1A-1YYYY or Figures 2A-2B~~; and

(d) a fragment of a nucleotide sequence of (a), (b), or (c) comprising the polymorphic variation; and

selecting a subject that will respond to the breast cancer treatment based upon the presence or absence of the one or more polymorphic variations in the nucleic acid sample.

56 (original). The method of claim 55, wherein the one or more polymorphic variations are at one or more positions in SEQ ID NO: 1 is selected from the group consisting of 50479, 50567, 51865, 58349, 58464, 68551, 70419, 73014, 75242, 75505, 78067, 78265, 78290, 78956, 79196, 81886, 82399, 83380, 86645, 86704, 88134, 96416, 96429, 96535, 110920, 14117, 117297, 117617, 118870, 123740, 123792, 123876, 123880, 126685, 126696, 126990, 127939, 146146, and 146312.

57 (original). The method of claim 55, wherein the one or more polymorphic variations are in a region spanning positions 78265 to 123880, spanning positions 78265 to 96535, or spanning positions 117297 to 123880 in SEQ ID NO: 1.